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Research Article

PHYSIOTHERAPY INTERVENTION IN VESTIBULAR MIGRAINE: AN EXPERIMENTAL STUDY

Shahanawaz S D[1*], Parikh Henali[2]

[*1]Assistant Professor, Ph D Scholar, School of Physiotherapy, R K University, Bhavnagar Highway, Kasturbadham, Rajkot, Gujarat, India.

[2]MPT Final year Student, School of Physiotherapy, R K University, Bhavnagar Highway, Kasturbadham, Rajkot, Gujarat, India.

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ABSTRACT

Background: The prevalence of migraine, according to the criteria of the International Headache Society (IHS), is at least three times higher in those with vertigo. Patients with various forms of disequilibrium and some manifestations of migraine may have a condition known as vestibular migraine (VM), also known as migraine-associated vertigo or migrainous vertigo, migraine related Vestibulopathy, have all been applied to roughly the same patient population. Migraine is a very common, chronic neurological disorder, affecting about 6 % of men and 15 % to 18 % of women with the highest prevalence between the ages of 25 and 55. The public health burden of migraine is high because migraine attacks are associated with temporary disability and substantial impairment in activities. Headache experts have proposed that regular, moderate aerobic exercise improves cardiovascular fitness and helps to reduce the frequency, severity and duration of migraine attacks in with or without aura. Whitney suggested that vestibular exercise is beneficial for migraine, but it reduce the vestibular symptoms in migraine.

Method: Randomized Controlled Sample of 30 subjects with vestibular migraine was taken for the study. The subjects were divided into two groups. Outcome measured HIT, DHI were taken pre and post treatment. Group A is experimental group and Group B is control Group. Group A received design protocol for thirty days, five days a week till six weeks, each day one session. Group B received shoulder and neck ROM exercise with ten repetitions.

Results and Discussion: Independent Sample T-Test shows significant difference in HIT scale. P value is 0.046. It shows no significant difference in DHI scale. P value is 0.235.

Conclusion: In this study exercise protocol is effective for headache and migraine related disability in VM patients. Exercise protocol is not effective to reducing vestibular symptoms in VM patients.

KEYWORDS: Vestibular Migraine, Physiotherapy Intervention.

INTRODUCTION

Migraine may manifest with attacks of vertigo has been repeatedly documented from the early days of neurology.[8] Starting with Kayan and Hood's classic article, the clinical feature of vestibular Migraine have been well delineated in several large case series.[7] Vertigo, dizziness, and migraine are quite common in the general population, and in some patients, they may be inter-related.[5, 6]The prevalence of migraine, according to the criteria of the International Headache Society (IHS),[6] is at least three times higher in those with vertigo.[6] Patients with various forms of disequilibrium and some manifestations of migraine may have a condition known as vestibular migraine (VM), also known as migraine-associated vertigo or migrainous vertigo, migraine related Vestibulopathy, have all been applied to roughly the same patient population.[6]

Migraine is a very common, chronic neurological disorder, affecting about 6 % of men and 15 % to 18 % of women with the highest prevalence between the ages of 25 and 55. The public health burden of migraine is high because migraine attacks are associated with temporary disability and substantial impairment in activities,[11] and severe migraine is ranked in the highest disability class. Migraine headache is related to substantial economic loss.

Physical therapy has been reported to improve imbalance in patients with vestibular migraine in an uncontrolled study. [17] Whitney suggested that vestibular exercise is beneficial for migraine, it reduces the vestibular symptoms in migraine.[17] Vestibular exercise train eyes to move independently of the head, and to practice balance and head movements that cause dizziness. The exercises consist of a series of eye, head, and body movements, in increasing difficulty, which aim to provoke symptoms. The goal of these exercises is to fatigue the vestibular response and force the central nervous system to compensate by habituation to the stimulus.

MATERIALS AND METHOD

1. **Material**: Paper, Pen, Chair, Table, Stop watch, Ball.
2. **Study population**: vestibular migraine patients.
3. **Study design**: Clinical Study
4. **Data collection**: Aims hospital (Ahmedabad), Sparsh physiotherapy Clinic, Dr. Jitender Singh Neurophysician clinic.
5. **Sampling method**: Randomized Controlled Sampling
6. **Sample size**: 30
7. **Inclusion criteria**
   - Having a history of migraine before study participation.
   - Neurologist or ENT diagnosed vestibular migraine.
   - Adults in age group 25 year to 55.
   - Both Genders.
8. **Exclusion criteria**
   - Individual having any other neurological deficits.
   - Severe orthopedic involvement of upper limb and lower limb.
   - Mental retardation.

Any associated Neurological condition, like Head injury, spinal cord injury etc.

Methodology

A study proposal was submitted to school of physiotherapy, R. K. University, and permission of ethical clearance was issued prior to the study. An experimental study was undertaken for the purpose of the study. Adults diagnosed by ENT or Neurologist having vestibular migraine, and age group between 25 to 55 were selected from AIMS hospital, Dr. Jitender Singh Neuroclinic, Sparsh physiotherapy. Randomized Controlled Sampling was done and sample of 30 subjects was taken. Written informed consent was taken from the subjects and the procedure and purpose of the study was explained to them.

Thirty subjects of both male and female having vestibular migraines were selected. They are divided into two groups using randomized control sampling. Group-A is experimental group, Group-B is control group, each group having 15 subjects. After randomization, each participant received a questionnaire containing a variety of self-report measures, followed by a standardized history and physical examination by the researcher physical therapist.

Outcome Measures

Self-report measured include the following questionnaires: Dizziness Handicap inventory (DHI), Headache impact Test (HIT-6). Both self-report measured were taken pre and post treatment.

The purpose of DHI scale is to identify difficulties that patient may experience because of dizziness. Subjects were asked to marked Yes or No or sometimes for each question Questionnaire consists of 25 questions in total. DHI is divided into three subscale's DHI-F, DHI-E, and DHI-P. They had to mark on scale, where yes= 4, no=0, sometimes=2. The higher the score indicate more severity.

The purpose of HIT-6 is to identify severity and disability due to headache. Subjects were asked to mark each question never or rarely or sometimes or very often or always. HIT-6 consist 6 questions. To score the scale never=6, rarely=8, sometimes=10, very

often=11, always=13. Higher score is directly proportionate to impact of headache in patient's life.

Group-A received the designed protocol for 5 days a week, for a period of six week which include every day one session. The total duration of the study is, thirty days and Group-B received Neck and shoulder ROM exercises. This consists of shoulder flexion, extension, abduction, adduction, internal and external rotation, circumduction along with neck flexion, extension, and lateral rotation. Each exercise was repeated for 10 times repeated same as above for thirty days. After the treatment self report measured DHI and HIT was taken.

Exercise protocol

A. Vestibular exercise

In sitting

1. Eye movements-at first slow, then quickly
   a. Up and down.
   b. From side to side.
   c. Focusing on finger movement from 3 ft to 1 ft away from face.
2. Head movements at first slow, then quick; later with eyes closed:
   a. Bending forward and backward.
   b. Turning from side to side.
3. Shoulder shrugging and circling.
4. Bending forward and picking up objects from the ground. (Above mention each exercise were performed 20 times daily.)

B. Aerobic exercise

1. Warm up exercise - (5 minute)
   a. Breathing exercise - 2minute
   b. slow walking -3 minute
2. Brisk walking -10minute
3. Steeping - 2minute
4. Marching-10 times
5. Cool down exercise (5 minute)
   a. Breathing exercise - 2minute
   b. slow walking -3 minute
   c. Mental imaginary technique-1 minute

RESULTS AND DISSICUSION

An experimental study consisting of 30 patients of Vestibular migraine is taken up to identify the significance of study parameter between Group-A and Group–B. Independent Sample T-Test is to find the significance level.

Table1: Independent Sample T-Test

	GROUP	N	Mean	Std. Deviation	Std. Error Mean	Mean Difference	t value	p value
DHI	Experimental group	15	0. 40	0. 828	0. 214	-0. 533	1. 214	0. 235
	Control group	15	0. 93	1. 486	0. 384			
HIT	Experimental group	15	9. 40	2. 613	0. 675	-1. 467	1. 841	0. 046
	Control group	15	10. 87	1. 642	0. 424			

DISCUSSION

The results found in this study disclosed that after physical therapy intervention total HIT score of group A and group B in independent sample t-test P value is significant P-0. 046

These findings are in accordance with the ones found by S Osun Narin; L Pinar et al concluded that Regular sub maximal aerobic exercise may reduce the pain and disability associated with migraine [15]. Swan RA, et al demonstrated that aerobic exercise significantly improves cardiovascular fitness, regulate muscle tone and decrease migraine attacks. [18] McCrory P, suggest that this might be linked to an acute rise in NO level.[13] Sarchielli demonstrated increased L- arginine /NO pathway activity in platelets from patients who suffered from migraine with or without aura. , this effect was particularly striking during the attacks. [19] Jungersten +-*et al*. showed that 2 hours of physical exercise was associated with an 18% rise nitrate (a major stable end product of NO metabolism) above resting levels. [20] Other author have also reported a transient rise in blood nitrate concentration after exercise

moderate intensity level was that it may be contributing factor to avoid exercise –induced migraine. [16]

The total DHI score of both group A and group B with Vestibular migraine suggests that statically No significant improvement were demonstrated on DHI It is interesting that statically significant improvement were found in Chi-Square test of physical and functional subscale of the DHI in group-A. There were no significant demonstration of emotional sub scale of DHI in group A. Group B was not demonstrating the significant improvement in chi- square test of physical, functional and emotional. This findings are in accordance with the study by Susan whitney et al, suggested that Vestibular migraine patients had more severe headache that affect their score on the emotional subscale of DHI.

The patients in the group-A improved their physical performance during gait, they still felt emotionally handicapped. Lawrence RH et al; suggested that improvement of DHI subscale physical, and functional in group-A decreased in the risk of falling. It has been shown that both the risk of falling and the fear of falling lead to decreased activity, decreased functional status, and greater morbidity. [10] This phenomenon appears to be cyclic: falling and a loss of balance increase fear of falling, which leads to inactivity, which contributes to balance impairments. Vestibular physical therapy breaks this cycle by improving balance abilities, decreasing risk of falling, and increasing confidence, which increases activity, thereby promoting improved balance abilities. It has been documented that patients with migraine experience anxiety, which can contribute to dizziness.[1] Which also lead to effect of emotional subscale in VM patients.

CONCLUSION

The study concluded that exercise protocol is effective in reducing pain and migraine related disability in HIT Scale for VM patients. It has been proved that Physical and functional vestibular symptoms in DHI subscale is improved but there is no improvement in DHI emotional subscale. In addition, there for exercise protocol was recommended in pain migraine related disability. But for reducing vestibular symptoms further research is needed.

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***Address for correspondence**
Dr. Shahanawaz S D
Assistant Professor
School of Physiotherapy
RK University, Bhavnagar Highway
Kasturbadham, Rajkot
Gujarat, India.
Email: shanu.neuropt@gmail.com
Phone: +918238570233